

EXHIBIT 12

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EXHIBIT 9



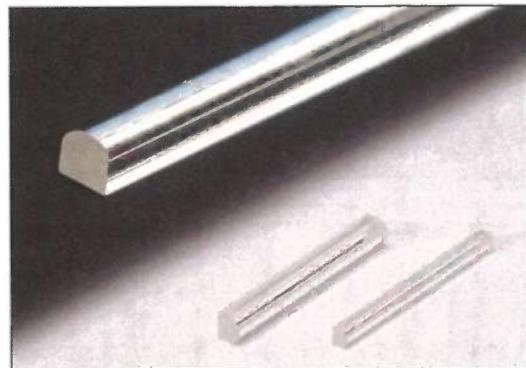
NEW

FAC LENS (Fast-Axis Collimating Lens)

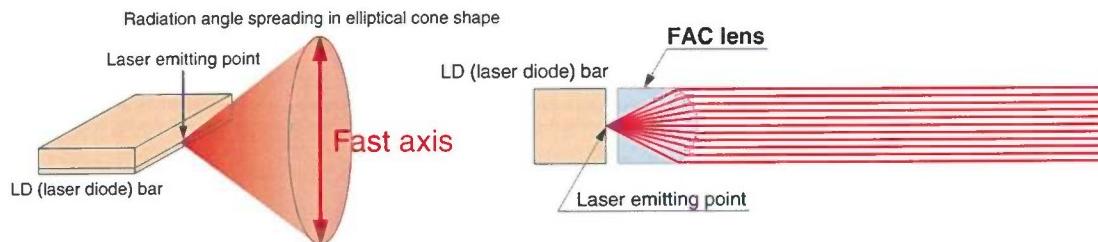
J10919 SERIES

OVERVIEW

The J10919 series FAC lens is an optical lens that collimates light spreading from a semiconductor laser in the fast-axis direction. Semiconductor lasers have a large divergence angle in the fast-axis direction, so the output light cannot be efficiently used unless collimated. The FAC lens collimates light spreading from a semiconductor laser into a narrow beam with a radiation angle of several milliradians (mrad) or less so that the diverging light can be efficiently utilized.



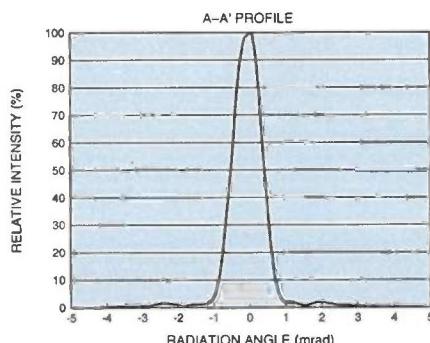
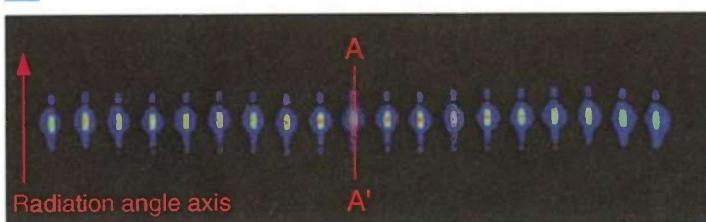
COLLIMATING LIGHT



FEATURES

- Aspheric micro-cylindrical lens
- Highly efficient utilization of light from LD bar
- Small variations in characteristics allow mass production
- Minimized smile and side lobes due to high-precision fabricating technology

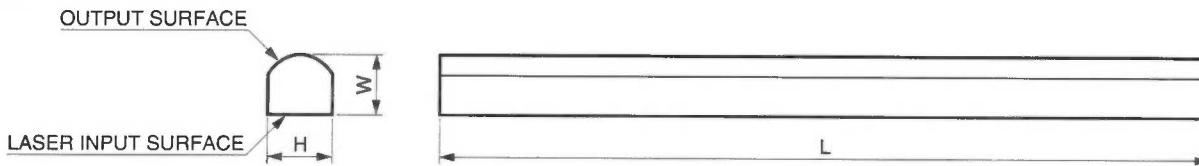
OUTPUT DISTRIBUTION IMAGE WHEN INSTALLED TO LD BAR



SPECIFICATIONS

Parameter	J10919-01	J10919-02	Unit
Material	High refractive index glass (developed in-house)	—	—
Design Wavelength	808	—	nm
Refractive Index at 808 nm	1.812	—	—
Length (L)	12.00	—	mm
Height (H)	1.00	1.50	mm
Width (W)	0.94	1.41	mm
Effective Focal Length (EFL)	0.61	0.92	mm
Back Focal Length (BFL)	0.10	0.15	mm
Effective Area	90 % of output area	—	—
Numeric Aperture (NA)	Min. 0.8	—	—
Coating	Anti-reflection film	—	—
Efficiency	Min. 85 (± 1.5 mrad)	85 (± 1.0 mrad)	%
Operating Ambient Temperature	-30 to +60		°C

DIMENSIONAL OUTLINES (Unit: mm)

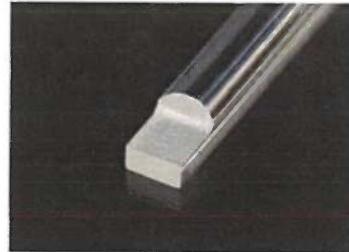


* See the above specification table for L, H and W.

MACHINING OPTIONS

- Changing length
- Grooving at edge
- Changing focal length
- Changing design wavelength

Please feel free to contact us for modification.



Example of grooving at edge

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HAMAMATSU PHOTONICS K.K., Electron Tube Division

314-5, Shimokanzo, Iwata City, Shizuoka Pref., 438-0193, Japan, Telephone: (81)539/62-5248, Fax: (81)539/62-2205

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P. O. Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-2658 E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: Infos@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Teviot Road Welwyn Garden City Hertfordshire AL7 1BW, United Kingdom, Telephone: 44-(0)1707-294888, Fax: 44(0)1707-325777 E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171-41 SOLNA, Sweden, Telephone: (46)8-509-031-00, Fax: (46)8-509-031-01 E-mail: Info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39)02-935 81 733, Fax: (39)02-935 81 741 E-mail: Info@hamamatsu.it

China: HAMAMATSU PHOTONICS (CHINA) Co., Ltd.: 1201 Tower B, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

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